IN THE CLAIMS

1-26. (Cancelled)

27. (Currently Amended) A system for producing chlorine dioxide, comprising:

an electrochemical acidification cell comprising an anode compartment comprising an anode, a cathode compartment comprising a cathode, and a central compartment positioned between the anode and cathode compartments, wherein the central compartment comprises a cation exchange material and an outlet in fluid communication with a conduit;

an alkali metal chlorite solution in fluid communication with an inlet of the central compartment of the acidification cell ~~and in fluid communication with an effluent produced in the anode compartment~~;

an effluent from the anode compartment in fluid communication with the inlet of the central compartment of the acidification cell;

a water source in fluid communication with the anode and cathode compartments, wherein operation of the electrochemical acidification cell produces a first feedstream comprising chlorous acid from the conduit; and

a vessel in fluid communication with the conduit and downstream from the electrochemical acidification cell, wherein the vessel is partially filled with water and comprises an outlet in fluid communication with the water; a cartridge having a lower portion with openings in fluid communication with the water; and a solid phase chlorine-containing material disposed within the cartridge, wherein a portion of the solid phase chlorine-containing material is submerged in the water within the cartridge to produce a dissolved chlorine-containing material within the vessel,

wherein the system is configured to combine the first feedstream with the dissolved chlorine containing material within the vessel to produce the chlorine dioxide from the outlet.

28. (Original) The system of Claim 27, wherein the cation exchange material is selected from the group consisting of strong acid polystyrene divinylbenzene crosslinked resins, weak acid polystyrene divinylbenzene crosslinked resins, iminoacetic acid polystyrene divinylbenzene crosslinked chelating selective cation exchange resins, synthetic inorganic cation exchangers and naturally occurring cationic exchangers.

29. (Original) The system of Claim 27, wherein the solid phase chlorine-containing material is selected from the group consisting of calcium hypochlorite, sodium hypochlorite, lithium hypochlorite, dichloroisocyanurate, trichloroisocyanurate, and mixtures thereof.

30. (Previously Presented) The system according to Claim 27, wherein the electrochemical acidification cell produces a reaction medium pH of about 2 to about 3.

31. (Previously Presented) The system according to Claim 27, wherein the vessel further comprises a float valve in operative communication with a water inlet, wherein the float valve is adapted to maintain a predetermined level of the water in the vessel.

32. (Previously Presented) The system according to Claim 27, wherein the solid phase chlorine-containing material has a solubility limit of 0.1 to 500 grams per liter.

33. (Previously Presented) The system according to Claim 27, wherein the solid phase chlorine-containing material has a contact area per unit volume of solution of about 0.0002 cm^{-1} to about 3.14 cm^{1}.

34. (Previously Presented) The system according to Claim 27, wherein the water in the vessel is at a temperature of about 5 to about 60°C.

35. (Previously Presented) The system according to Claim 27, wherein a pressure drop across the vessel is about 1 to about 40 pounds per square inch.

36. (Previously Presented) The system according to Claim 27, wherein the central compartment further comprises a catalyst material.

37. (Previously Presented) The system according to Claim 27, wherein a solid fraction of the solid phase chlorine-containing material in the vessel is about 40 to about 90 volume by volume %.